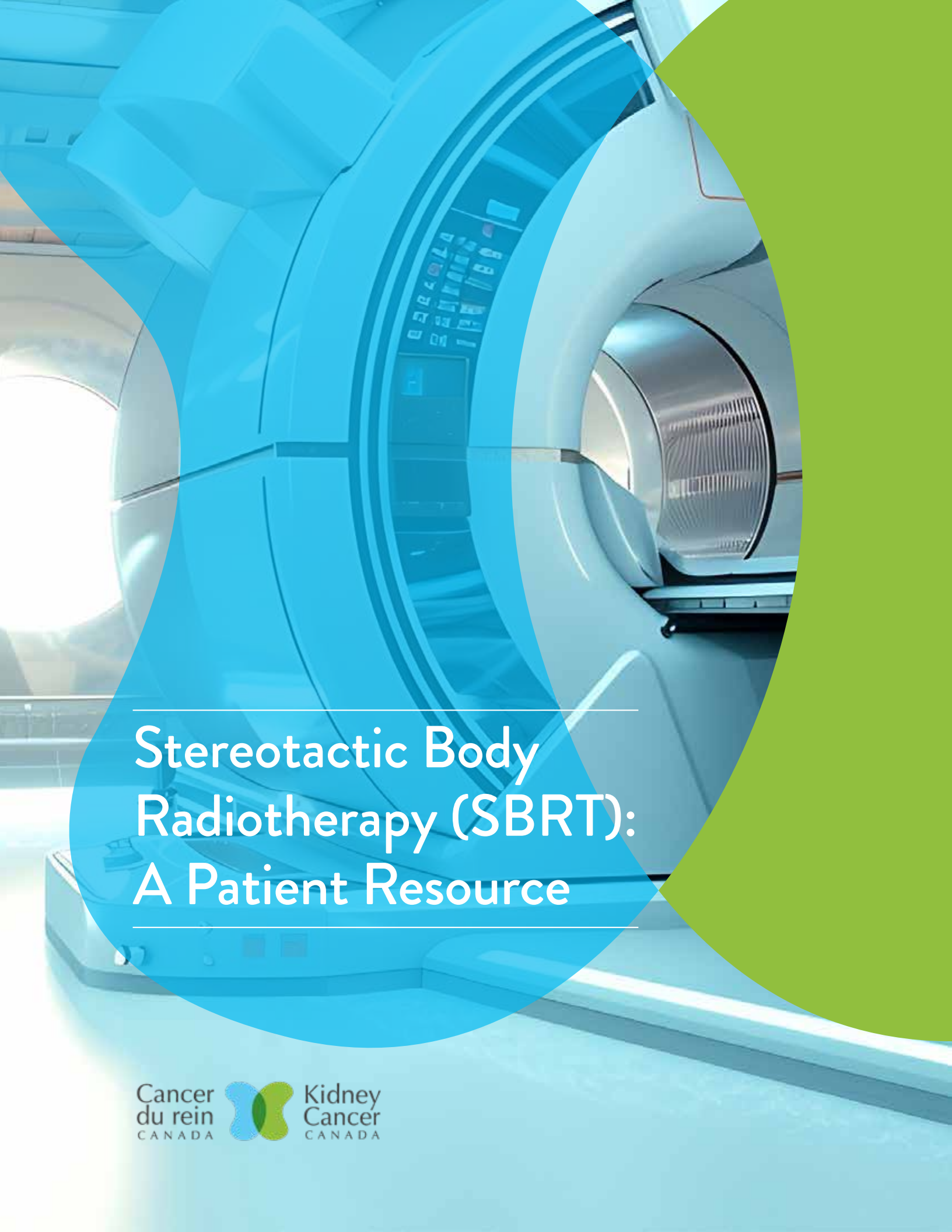

Stereotactic Body Radiotherapy (SBRT): A Patient Resource

Cancer du rein CANADA

Kidney Cancer CANADA

What's inside

SBRT EDUCATIONAL RESOURCE
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02

Stereotactic Body Radiotherapy (SBRT) – a practical guide

This guide is intended for those who have kidney cancer that is localized to the kidney (early stage), or for people living with advanced (metastatic) kidney cancer, where your surgeon or medical oncologist has felt that SBRT may be helpful in treating your cancer at this time.

Download this guide and bring it to your consultation and any subsequent appointments with your radiation team. As there are many situations where radiation may play a role in treating your cancer. The purpose of this guide is to help direct your understanding about why radiation is being offered, what the intention of the radiation is, and to ensure you have all the answers you need to make a clear and informed decision along with your medical team.

03

What is radiation therapy?

In general, radiation therapy is a form of treatment that uses high energy x-rays to treat cancer that can be located in any part of the body. Radiation is typically delivered using a machine called a linear accelerator, but other methods of radiation delivery are also available. A radiation oncologist is a cancer specialist who determines whether radiation will be useful in your situation. However, your radiation team will consist of many people including nurses, radiation therapists (who actually administer the radiation), dosimetrists (who help map out the radiation) and medical physicists (who work behind the scenes to ensure the radiation is being delivered with high quality and precision).

And what is SBRT?

A Linear Accelerator is a machine that uses electricity to form a stream of fast-moving subatomic particles. This creates high-energy radiation that is used to treat cancer.

Some doctors call it SBRT while others may refer to it as SABR. It means the same thing. SBRT is a form of radiation therapy whose goal is to deliver a very high dose of radiation to the cancer, in a single or few (5 or less typically) sessions. It is different to more conventional radiation, where a little bit of equal amounts of radiation are given over weeks of treatment. However, kidney cancer cells do not respond as well to these more traditional treatments.

SBRT for localized kidney cancer

If you are seeing a radiation oncologist because you have a localized kidney cancer, this may be because it was felt that surgery or other therapies may be too risky based on many different reasons. It could also mean that your doctors wanted to explore non-surgical options for you. Questions that may be helpful as you learn more about the role SBRT may play include:

- **Why is radiation best for me? How is it different from surgery? From ablation?**
- **Are there particular aspects of my cancer (where it is located, its size) that make radiation a good option for me?**
- **How effective is radiation at controlling or curing the cancer? Does it work right away? Will the cancer disappear like after surgery?**
- **What are the short and long term side effects of radiation? It is safe?**
- **How will radiation affect the health of my kidneys?**

04

SBRT for metastatic kidney cancer

You may be consulted by a radiation oncologist because you have metastatic kidney cancer, and may be on systemic therapy (either targeted therapy or immunotherapy, or both), or on active surveillance (watchful waiting), and the cancer is either growing or causing symptoms. There are many reasons to give radiation in metastatic kidney cancer, but with SBRT in particular, the most common indications are for "oligometastases" or "oligoprogression". Oligometastases occur when the kidney cancer has spread beyond the kidney, but only to one or a few areas (ie. one spot in the lung, and one spot in the spine).

Oligoprogression is when the cancer may be more widespread, but is only growing in one or a few spots (much like faster growing weeds in a garden). The following questions may be helpful in figuring out your specific journey, and the role SBRT has to play:

- **How many metastases do I have? How many of these are growing?**
- **Where are these lesions? How big are they?**
- **How long have they been there?**
- **Do I need to start/change my systemic therapy because they are growing?**
- **If I start/change systemic therapy now, can I get SBRT later if one or two lesions grow?**
- **If I get SBRT now, will I not be allowed to start/change my systemic therapy later?**
- **Can I get SBRT more than once to the same area? Why or why not?**
- **If SBRT works but the cancer grows again, can I get SBRT again?**
- **What are the side effects (short and long term) for SBRT? Does it depend on where the lesion you are treating is in my body?**
- **Is SBRT supposed to cure my cancer? What is the goal of SBRT in my case?**

05

But....my doctor is not recommending SBRT?

There are many reasons why SBRT may not be recommended, even when you were referred to see a radiation oncologist for SBRT. Some reasons include but are not limited to: the disease is too extensive or the risks of radiation outweigh the benefit, the lesions are in very high risk areas (adjacent to sensitive organs that may get damaged by the SBRT), you have already had radiation (either SBRT or other radiation in the past) where there is too much overlap and the risks are too high to give more SBRT, or you have developed symptoms (ie severe pain or bleeding) or may not be well enough that giving SBRT may not improve your overall quality of life. It is important to discuss these issues with your doctor so you are clear as to why your situation may be different than others who are being offered SBRT.

06

What should I expect during the SBRT process?

The first time you go through the process of radiation it can be overwhelming as it is a very new and different experience for most people. The general steps that most will encounter during the SBRT process are:

1. You will have a specialized CT scan (CT "simulation") to help mark out the area(s) to be radiated.
2. You will be typically lying flat on your back, with your arms raised or at your sides
3. You may/may not need to lie in a custom device in order to keep your body extra still, or you may have to wear a customized mask or other frame
4. Depending on the area being treated, and your kidney function, the doctor may decide to give IV contrast to better see the tumour
5. Special tools are used to help account for tumours that move during breathing (ie the lungs/liver/kidney). These tools are generally part of the radiation CT scan, but sometimes an external device is used to help limit breathing motion. Your treatment team will discuss these options for you, but the overall goal is to keep you as comfortable as possible.
6. Once the CT scan is done, the radiation therapists will put small tattoos on your skin to help them ensure they are targeting the right area for treatment
7. Your CT images then get transferred to a special software for the radiation oncologists and dosimetrists to map out a custom treatment for you. It is during this process (which takes 1-2 weeks) where we define where the tumour is, what dose to give, and how much radiation to allow for the nearby organs
8. Once the radiation plan is approved, it will go through a number of quality checks to ensure it is safe to start treatment.
9. Each radiation treatment usually lasts 15-20 minutes (or longer depending on the number of areas being treated). You will be set up in the same position as in the original CT "simulation". Before the actual radiation starts, a set of images (either x-rays or a mini-CT) will be done to align the target correctly and confirm your position. The radiation then turns on, usually lasts a matter of minutes, and then once you are finished you are ready to go home.

Be sure to have these questions on hand to ask your radiation oncologist as you embark on treatment:

- **Will I see you during the radiation treatment? How often?**
- **Should I see or feel anything during the actual treatment?**
- **If I am on targeted therapy (oral systemic therapy), do I need to stop this to get the SBRT? What about if I'm on immunotherapy? How long before/after do I need to stop my systemic therapy?**
- **Do I need to take any medications before or after the treatment to help with side effects?**
- **Are there any precautions I should take before or during treatment?**
- **Can you tell if the radiation is working during the treatment? Why or why not?**
- **If I am having side effects, who should I be speaking to and when should I contact my doctor?**
- **Can I change the radiation dosage if I am having side effects? Why or why not?**

07

Once SBRT is completed

Depending on the intention of the SBRT (localized versus metastatic), follow-up routines will vary. However, these general questions should provide you with direction on how your care will be coordinated following SBRT:

- **Who will follow me after SBRT?**
- **How long will it take to get over the initial effects of the SBRT?**
- **Will I receive regular scans? When will the first one be? What do you expect the cancer to look like on that scan?**
- **Can I continue my previous systemic therapy? When will it be safe to do so?**
- **How long should I continue the medications you gave me during the SBRT?**
- **When will I know the treatment has been effective?**
- **What is the expectation following SBRT? What are my options if SBRT doesn't work or the cancer grows somewhere else?**

Dr. Anand Swaminath is a clinician scientist and radiation oncologist at the Juravinski Cancer Centre, McMaster University, Hamilton ON. Canada. His clinical and research interests are in the application of new technologies in radiation therapy, specifically stereotactic radiation for a wide variety of indications including kidney, lung, and liver cancer. He has a particular interest in radiation for kidney cancer. He is a member of the International Radiation Oncology Consortium of Kidney (IROCK) group, the Canadian Kidney Cancer Information System (CKCis) steering committee and the medical advisory board for Kidney Cancer Canada. He is also a co-Principal Investigator on several local and national trials evaluating SBRT in both the primary and metastatic RCC setting.